

**IN THE U.S. PATENT AND TRADEMARK OFFICE**  
**BOARD OF PATENT APPEALS AND INTERFERENCES**

<b>Application No.:</b> 10/517,957	<b>Confirmation No.</b> 3769
<b>Application of:</b> Hughes, et al.	<b>Group Art Unit:</b> 1612
<b>Filing Date:</b> August 11, 2005	<b>Examiner:</b> Sznaidman, Marcos L.
<b>Title:</b> Spiroindolinepiperidine Derivatives	<b>Docket No.</b> 50698 <b>Customer No.</b> 86344

**REPLY BRIEF**

**VIA EFS**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

This Reply Brief is filed pursuant to 37 CFR 41.41, in response to the Examiner's Answer dated February 19, 2010.

## **1. STATUS OF THE CLAIMS**

Claims 1 – 14 are pending in the application. Claims 1 – 7 and 9 stand withdrawn from consideration. Claims 8 and 10 – 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over GB1603030 (Hoechst) in view of US 3,959,475 to Bauer et. al. (Bauer). A copy of the claims on appeal in this Application (i.e., Claims 1-14) was set forth in the Claims Appendix attached to the Appeal Brief filed September 8, 2009.

## **2. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Presently, Claims 1-14 are pending in the Application. Claims 8 and 10 – 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over GB1603030 (Hoechst) in view of US 3,959,475 to Bauer et. al. (Bauer). No new grounds of rejection were presented in the Examiner's Answer.

## **3. ARGUMENT**

For the reasons discussed in the Appeal Brief filed on September 8, 2009, Appellants contend that the rejection is improper and request that the rejection be reversed. The Board is requested, however, also to consider the following remarks, which are submitted in response to assertions and arguments presented in the Examiner's Answer.

**A. The rejection of 8 and 10 – 14 under 35 U.S.C. 103(a) as being unpatentable over Hoechst (GB1603030) in view of US 3,959,475 to Bauer et.**

**al. (Bauer) should be overturned because the Examiner has failed to establish a *prima facie* case of obviousness.**

Claims 8 and 10 – 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over GB1603030 (Hoechst) in view of US 3,959,475 to Bauer et. al. (Bauer). The Examiner continues to argue that both Hoechst and Bauer disclose compounds having similar utility and structure with each other as well as with the instantly claimed compounds (See Advisory Action dated July 21, 2009, page 2; See Examiner's Answer dated February 19, 2010, page 7). As a result, the Examiner continues to disregard: (a) the marked differences in the chemical compounds of the instant claims in comparison to the compounds disclosed by Hoechst or Bauer (See Advisory Action dated July 21, 2009, page 2; See Examiner's Answer dated February 19, 2010, page 7); and (b) the lack of motivation for one of ordinary skill to combine the teachings of Hoechst and Bauer to arrive at the instantly claimed compounds.

Appellants again note a complete lack of any common utility when comparing the present invention with the disclosure of Hoechst. The utility of the presently claimed compounds relates to the **killing** of agriculturally harmful insects, molluscs, acarids and nematodes. The utilities disclosed in each of Hoechst and Bauer relate to pharmaceuticals for **tranquilizing** mammals and antidepressants.

Appellants also wish to reiterate the fact that the compounds disclosed in Bauer are sufficiently structurally very different from those of the instantly claimed compounds (Appellants hereby reiterate differences in the ring heteroatom, ring heteroatom position and heteroatom substitution as discussed in the Appeal Brief of September 8, 2009, pages 8-9). One of ordinary skill would have to make numerous changes, with absolutely no teaching of such, to the compounds of Bauer in order to arrive at the instantly claimed compounds. The person of ordinary skill would be aware that making any one change to the structure as noted above would likely result in a loss of activity, discussed, *infra*. The person of ordinary skill could not simply predict that the compounds of the present invention would be active. The compounds differ in a number of important respects from those of Bauer (see Appeal Brief of September 8, 2009, pages 8-9).

Lastly, the Examiner continues to fail to provide a reason why the person of ordinary skill would realistically combine the disclosure of Hoechst with that of Bauer in order to prepare insecticidal compounds. The disclosures of these documents relate to totally different technologies. The relevant person of ordinary skill in the art would have no reason to suppose that the compounds of Hoechst could be modified by the teaching of Bauer to arrive at any insecticidally useful properties. In fact, the person of ordinary skill, contemplating the teaching of Hoechst, would be taught away from the compounds of the present invention. The

fact that the compounds of Hoechst are disclosed as psychoactive in mammals would motivate the skilled person to avoid such structures as potential insecticides.

Further evidence of the lack of motivation on behalf of one of ordinary skill is rooted in the differences between the compounds of Hoechst and the compounds of Bauer. Bauer discloses compounds wherein the heteroatom in the fused “spiro” ring is oxygen (i.e. isobenzofuran), whereas Hoechst requires nitrogen in the respective ring. One of ordinary skill in the art understands that oxygen and nitrogen possess very different chemical and physical properties, including, but not limited to: (i) valency; (ii) electronegativity; (iii) hydrogen bonding capability; and (iv) basicity. Differences in these properties can have a substantial impact on the biological activity and profile of the respective compound. In addition to the differences in heteroatom, the compounds of Bauer and Hoechst differ in the positioning of their respective heteroatoms in the fused “spiro” ring system. In the compounds of Bauer, the heteroatom (oxygen) is present in the 2-position, whereas in the compounds of Hoechst, the heteroatom (nitrogen) is present in the 1-position. This different positioning of heteroatoms results in molecules with substantially different distributions and spatial arrangement of charge density. The Examiner fails to appreciate the significance of the ring heteroatom position and the impact on the lack of motivation for combining the references to arrive at the instantly claimed compounds. For example, the nitrogen atom (present in the 1-

position in the compounds of Hoechst) is directly attached to the adjacent phenyl ring. Such positioning will significantly affect the electron density of the nitrogen atom as well as the respective ring systems. Specifically, in this instance, the phenyl ring withdraws electron density away and acts as an electron sink. In comparison, the oxygen atom (present in the 2-position in the compounds of Bauer) is not directly attached to the corresponding phenyl ring, and an electron sink effect will not be observed.

One of ordinary skill in the art understands that each of the above differences, alone, can have a profound impact on the activity and profile of the respective biologically active molecules. Thus, one of ordinary skill in the art would not be motivated to consider combining the teaching of Hoechst with that of Bauer in order to arrive at the instantly claimed compounds.

To summarize both the remarks of the Appeal Brief filed September 8, 2009, and the additional remarks presented herein, the Examiner has not met the burden of proving a case of *prima facie* obviousness, because:

- i) The compounds of Hoechst have a completely different utility from those of the present invention;
- ii) The compounds of Bauer have a completely different utility from those of the present invention and are structurally very remote from those of the present invention;

- iii) The skilled person would not be motivated to combine the teaching of Bauer with that of Hoechst in order to arrive at the inventive compounds;
- iv) Even if the references were to be combined, the skilled person would not achieve the present invention; and
- v) The disclosure of Hoechst actually teaches away from the use of spiroindoline-3,4-piperidines as insecticides.

Thus, a *prima facie* case of obviousness has not been established. The Examiner has failed to properly consider the factual differences between the claimed invention and the prior art. Accordingly, Appellants request that the rejection of Claims 8 and 10-14 under 35 U.S.C. § 103(a) be withdrawn.

#### 4. CONCLUSION

For the reasons given above and in the Appeal Brief, the subject matter of the appealed claims is not unpatentable over the grounds of rejection applied by the Examiner. Appellants therefore respectfully request that the rejections of Claims 8 and 10-14 under 35 U.S.C. § 103(a) be reversed.

The Commissioner is hereby authorized to charge any fees that may be required for the timely consideration of this Reply Brief to Deposit Account No. 09-0528.

Respectfully submitted,

Date: April 19, 2010

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